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PLANNING, ERECTION, AND OPERATION OF HIGH-PRESSURE TURBINE INSTALLATIONS

In the resolution passed by the Council it was pointed out that the following measures are necessary to accelerate and improve the quality of erection work and increase the reliability and operational economy of high-pressure electric power stations.

1. Development of suitable evaporators, preferably vertical, for the VK-50 and VK-100 turbine systems

2. Development of three-stage preheating of the supply water for the boiler installations of the VT and VFT heat and power turbines, using the auxiliary turbine proposed by LMZ (Leningrad Metal Works) for this purpose

3. Development of LMZ of a thermal scheme for the VPT turbine with steam regenerator apparatus, examining also the variant recommended by Teploelektroproyekt using high-pressure desaturators

4. Alteration of the existing construction of the automatic feed boxes on the high-pressure preheaters so as to enable a preheater, or a group of preheaters, to be examined and refitted by an automatic isolating scheme.

The following requirements must be borne in mind when designing high-pressure electric power stations

1. The block system with connectors should be used for the main steam pipes. As regards the main feed lines, single intake and delivery pipes should be used for the cold feed, and twin pipes for the hot feed of drum boilers.

2. The number of drains in constant use should be as small as possible. They should be restricted to high-pressure steam pipe dead ends and sections supplying stand-by machinery, e.g., the stand-by turbo-feed pump.

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3. High-pressure turbines should be fitted with steam-moistening equipment to be supplied with the turbines.

4. Each turbo unit should be provided with a washing-through device for the flow part of the turbine.

5. High-pressure deaerators should be fitted with automatic pressure and level regulators and continuous recorders showing the oxygen content of the water. Deaerators should be supplied complete with these fittings.

6. All turbine bleeders (except those on the vacuum side) should be fitted with control valves with automatic positive closure.

The Technical Council decided that the following problems require additional study

1. The use of high-pressure deaerators in turbine systems. IMZ is requested to work on the problem of designing such deaerators.

2. The use, at high-pressure stations, of constantly operating feed pumps driven from the high-pressure turbines, their exhaust being utilized in the regeneration system of the main turbines.

The Technical Council stressed that the initial results obtained for these installations showed insufficient economy.

All operational boards with high pressure installations should:

1. Take necessary steps to ensure repair of damaged turbine packing and blades in order to eliminate existing loss of economy and power limitation

2. Use water preheaters, deaerators and regeneration system heat exchangers and ensure that they work at the designed parameters

3. Bring live-steam temperature and pressure to the designed values and not allow any appreciable variations of steam parameters in the boiler room, arranging for accurate measurement of steam temperature

4. Reduce the number of drainage points in the boiler room and engine room to a minimum.

5. Have stations adjust and put into service the existing automatic starters for the turbo and electric fuel-oil pumps.

6. Install indicators showing the deposit of salts in the high-pressure turbines of the type used in the Stalinogorsk State Regional Power Station and Kamensk Heat and Power Station. Responsibility for maintenance of this apparatus is to be born by the turbine and chemical shops.

7. Organize tests of each new high-pressure turbine to determine the best starting and loading procedure.

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